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Invariants of the action of a semisimple Hopf algebra on PI-algebra

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Abstract

© 2016, Allerton Press, Inc.We extend several classical results in the theory of invariants of finite groups to the case of action of a finite-dimensional Hopf algebra H on an algebra satisfying a polynomial identity. In particular, we prove that an H-module algebra A over an algebraically closed field k is integral over the subalgebra of invariants, if H is a semisimple and cosemisimple Hopf algebra. We show that for char k > 0, the algebra Z(A)H0 is integral over the subalgebra of central invariants Z(A)H, where Z(A) is the center of algebra A, H0 is the coradical of H. This result allowed us to prove that the algebra A is integral over the subalgebra Z(A)H in some special case. We also construct a counterexample to the integrality of the algebra AH0 over the subalgebra of invariants AH for a pointed Hopf algebra over a field of non-zero characteristic.

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Keywords

coradical, Hopf algebra, PI-algebra, quotient ring, theory of invariants